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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/571,748

Applicant(s)

PETRILLO ET AL.

Examiner

CAROLYN IGYARTO

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9 and 11-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-9 and 11-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 29 November 2007 was accepted and entered. Accordingly, changes have been made to the drawings. Claims 2, 4, 7-9, 11, and 13 have been amended. Claims 1 and 10 have been cancelled. Claim 21 has been newly added. Thus, claims 2-9 and 11-21 are currently pending in this application.

2. In view of the new oath/declaration, received 29 November 2007, the previous objections made to the oath/declaration have been withdrawn.

3. In view of the changes made to the drawings and remarks, received 29 November 2007, the previous objections made to the specification are withdrawn.

It is noted, however, that annotated drawings have not been received. In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1).

The Examiner notes that the following reference characters for the original Fig. 1 have been changed: 26, 28, 30, 32, and 34. If other changes have been made to the drawings Applicant is required to submit Annotated Sheets.

4. In view of the amendment, received 29 November 2007, the previous objection to claim 6 has been withdrawn.

5. The previous objections made to claims 17 and 19 are repeated below. Applicant remarks that claim 17 has been changed. However, no changes have been made to claim 17. The objection made to claim 19 has not been addressed or amended.

6. Changes made to claims 9 and 13 are sufficient to overcome the rejection made under 35 USC 112 in paragraphs 14-15 of the office action mailed 09/06/2007.

Response to Arguments/Remarks

7. The rejection of claims 1-12 under 35 USC 112 remains applied. The Examiner notes Applicant's concern of changing socket to platform might be considered new matter. As can be seen by in Fig. 3 of Applicant's original disclosure structure **44** can be seen as a platform. Therefore, the Examiner **does not** consider changing socket to platform to be adding new matter.

8. Applicant's arguments filed 29 November 2007 have been fully considered but they are not persuasive.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies

(i.e., Lingren fails to disclose or reasonably suggest using rigid pins to align the detector array with the circuit board, because Lingren has no additional structure corresponding to the claimed alignment pins. (arguments pertaining to claim 2);

Lingren fails to disclose a frame for aligning the collimator. The frame is not a housing that encases the entire assembly. (arguments pertaining to claim 4);

Lingren does not disclose or fairly suggest using a frame to align a collimator.

Chu provides no structure for aligning a collimator while addressing thermal dilation. (arguments pertaining to claim 15))

are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

10. Applicant argues that Lingren does not teach rigid pins not to be used for carrying signals, because all pins are for signal carrying. The Examiner reminds applicant that Claim 3 has not been rejected solely in view of Lingren, but rather, Claim 3 has been rejected in view of both Lingren and Orava (See paragraphs 34-35 of office action mailed 09/06/2007). Orava teaches the use of pins that are solely used for

alignment purposes and are not used for transmitting electrical signals between the socket and the circuit board (col. 5, lines 41-51), for the benefit of increasing stability.

11. Applicant argues that Lingren fails to disclose a frame for aligning the collimator. This is not a claimed limitation of claim 4. Also, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Also, Lingren teaches that the collimator is mounted in a fixed alignment (see the alignment lines in Fig. 2), inherently this would include an alignment means.

12. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

13. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Applicant's arguments pertaining to claim 13 do not address how the limitations of claim 13 set the claimed invention apart from the prior art on record. Applicant states what is claimed and one element, which is taught by Orava. The Examiner, also, points out that Orava also teaches rigid alignment pins **5a** of precise cross section (col. 5, lines 40-43).

14. Applicant argues that Lingren teaches a pin hole collimator and claim 17 calls for the collimator to be a rectangular grid. Lingren teaches using either a collimator or a pinhole as element 205. Element 205 is shown in Fig. 2 to be of a rectangular shape. The prior art teaching a grid orientation of the collimator is shown in paragraph 47 of the office action, mailed on 09/06/2007.

15. Applicant argues that Lingren fails to disclose a collimator alignment mechanism. Lingren teaches that the collimator is mounted in a fixed alignment (see the alignment lines in Fig. 2), inherently this would include an alignment means.

16. Applicant has amended claim 11 to further limit the claimed invention to have a collimator mounting frame. A new rejection is applied to claims 11-12, necessitated by this amendment.

Claim Objections

17. Claim 17 is objected to because of the following informalities: lines 2-3 recite "mounting the collimator." "The collimator" lacks antecedent basis. Appropriate correction is required.
18. Claim 19 is objected to because of the following informalities: "the detector modules" lack antecedent basis. Appropriate correction is required.
19. Claim 9 is objected to because of the following informalities: "the conductor pins" lack antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

20. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

21. Claims 2-9, 11-12 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
22. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "socket" in claims 2-9, 11-12 and 21 is used by the claims to mean "a platform", while the accepted meaning is "an opening or hollow that forms a holder for

something." The term is indefinite because the specification does not clearly redefine the term.

23. Claims 13-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

24. Claim 13 has been amended to recite "a plurality of sets of electric connection pin receiving holes." However, line 2 of claim 13 already recites "a plurality of sets of electrically conductive holes." In light of the specification and drawings it appears that the electric connection pin receiving holes are the same as the electrically conductive holes. If this is in fact the structure of the invention then "and a plurality of sets of electric connection pin receiving holes" should be removed from the claim. If, instead, the recitation of a third type of hole is the intended this would be considered new matter because this third type of hole was not originally disclosed.

Claim Rejections - 35 USC § 102

25. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

26. Claims 2 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lingren et al. (EP 1249713), hereinafter referred to as Lingren.

27. With respect to **claim 2**, Lingren teaches a detector for a nuclear imaging system ([0029] lines 3-4), the detector comprising:

a plurality of sockets (214; [0030] lines 1-2, Each module 206 includes a carrier 214 as seen in Fig. 3a.) which each support an array of individual detector elements (Fig. 3a), each socket including:

a plurality of electrical connectors ([0037] lines 1-2; [0041] lines 2-3), and

a socket alignment structure that includes rigid pins ([0041] lines 2-4; [0048] lines 2-3; [0051] lines 1-2);

a circuit board (208) for receiving sockets ([0030] lines 1-3), which circuit board includes:

a plurality of electrical connection means that electrically connect with the electrical connectors ([0029] lines 5-6; [0037] lines 1-2; [0041] lines 2-4), and

a mating circuit board alignment structure that includes apertures of like-cross-section with the socket alignment structure rigid pins that mate with the socket alignment structure rigid pins to align the sockets and the individual detector elements to the circuit board ([0041] lines 2-4; [0048] lines 2-3; [0051] lines 1-2); and

a means for mounting a collimator to the circuit board in alignment with the circuit board ([0027] lines 3-4; Fig. 2).

28. With respect to **claim 8**, Lingren teaches the socket alignment structures include rigid pins positioned diagonally from each other (Fig. 3a).

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

30. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lingren et al. (EP 1249713), hereinafter referred to as Lingren, as applied to claim 2 above, and further in view of Orava et al. (US 5,955,733), hereinafter referred to as Orava.

31. With respect to **claim 3**, Lingren teaches all of the limitations of claim 2, as explained above. Lingren further teaches pins having separate functions ([0049] lines 1-2; [0051]; [0052]; Tables 1-2). If it is held that Lingren does not teach any of the pins are not used for transmitting electrical signals between the sockets and the circuit board; Then, Orava teaches the use of pins that are solely used for alignment purposes and are not used for transmitting electrical signals between the socket and the circuit board (col. 5, lines 41-51), for the benefit of increasing stability. Therefore, It would

have been obvious to one of ordinary skill at the time of the invention to have some of the pins taught by Lingren be used solely for alignment purposes and not used for transmitting electrical signals between the sockets and the circuit for the benefit of increasing stability.

32. With respect to **claim 9**, Lingren teaches the connectors are pins of relatively soft metal that tend to deform as the sockets are received on the circuit board (soldered [0049] lines 1-2).

33. Claims 4-6 and 18-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lingren et al. (EP 1249713), hereinafter referred to as Lingren.

34. With respect to **claim 4**, Lingren teaches, the collimator mounting means includes a frame ([0033] lines 1-2) and further including: an aligning means for aligning the frame and the circuit board ([0033] lines 1-2) and the collimator is mounted in a fixed alignment (Fig. 2). In the alternative, if it is held that Lingren does not teach the housing to surround the collimator (or the mounting means includes a frame) it would have been obvious to one of ordinary skill at the time of the invention to have the housing surround the collimator on the sides for the benefit of preventing stray radiation from adversely affecting the acquired image ([0032] line 3).

35. With respect to **claim 5**, Lingren teaches the individual detector elements are separated by interfaces or gaps (lines of separation 216; Fig. 3a) and wherein the collimator includes mechanical elements which define a plurality of apertures ([0027] line 4; collimators include a plurality of apertures, especially when an imaging device having a plurality of pixels is receiving the energy that is passing through the apertures), the mechanical elements being aligned with the interfaces or gaps such that the apertures are centered on and aligned with the individual detector elements (inherently, the collimator apertures and pixel centers are aligned providing the system with improved resolution). In the alternative, if it is held that Lingren does not inherently teach the collimator having a plurality of apertures or the apertures of the collimator being aligned with the center of the pixels; It would have been obvious to one of ordinary skill at the time of the invention to include a plurality of apertures in the collimator for the benefit of broadening the area being imaged at any given time. Also, It would have been obvious to one of ordinary skill at the time of the invention to align the apertures of the collimator with the center of the pixels for the benefit of increasing the resolution of the system.

36. With respect to **claim 6**, Lingren further teaches the aligning means includes: at least two alignment holes defined in the frame, and at least two matching holes defined in the circuit board ([0033] lines 1-2).

37. With respect to **claim 18**, Lingren teaches a detector for a nuclear imaging system ([0029] lines 3-4), the detector comprising:

a plurality of detector elements (detector elements 212) selectively securable to a circuit board ([0049] lines 4-6), the detector elements being separated by gaps (lines of separation 216);

a collimator comprising mechanical elements which define a plurality of apertures ([0027] line 4); and

a collimator alignment mechanism, said collimator alignment mechanism aligning the mechanical elements with the gaps separating the detector elements such that the apertures are aligned with the detector elements (Fig. 2).

In the alternative, if it is held that Lingren does not inherently teach the collimator having a plurality of apertures or the apertures of the collimator being aligned with the center of the pixels; It would have been obvious to one of ordinary skill at the time of the invention to include a plurality of apertures in the collimator for the benefit of broadening the area being imaged at any given time. Also, It would have been obvious to one of ordinary skill at the time of the invention to align the apertures of the collimator with the center of the pixels for the benefit of increasing the resolution of the system.

38. With respect to **claim 19**, Lingren further teaches a detector element alignment mechanism, said detector element alignment mechanism aligning the detector modules on the circuit board ([0041] lines 2-4).

39. With respect to **claim 20**, Lingren teaches each aperture is aligned with an individual detector element ([0027] line 4). In the alternative, if it is held that Lingren does not inherently teach each aperture is aligned with an individual detector element; it is well known in the art to have each aperture of a collimator correspond and be position with individual detector elements, for the benefit of increasing resolution. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to have each aperture of the collimator taught by Lingren to be aligned with an individual detector element for the benefit of increasing resolution.

40. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lingren et al. (EP 1249713), hereinafter referred to as Lingren, as applied to claims 2, 4, and 6 above, and further in view of Chu et al. (US 2004/0080952), hereinafter referred to as Chu.

41. With respect to **claim 7**, Lingren teaches all of the limitations of claims 1 and 4-5 or in the alternative all of the limitations of claims 4-5 are taught or made obvious, as explained above. Lingren further teaches the detection modules arranged in a rectangular array ([0048] lines 4-5 and 11).

Lingren does not explicitly teach the frame has a rectangular face including: a longer dimension, and a shorter dimension, the at least two frame alignment holes being disposed along the shorter dimension to reduce an effect of thermal dilatation.

However, it would have been obvious to one of ordinary skill at the time of the invention to have the housing, or frame, have similar dimensions to the array of detection modules for the benefit of decreasing wasted space and making the system more compact.

Chu teaches having two alignment structures of a frame disposed along the shorter dimension for the benefit of decreasing the difficulty in disassembling the frame ([0007] lines 7-8; [0009] lines 6, 9, and 15-16). Therefore, it would have been obvious to one of ordinary skill at the time of the invention to have the at least two frame alignment holes disposed along the shorter dimension in the invention of Lingren for the benefit of decreasing the difficulty in disassembling the frame.

42. Claims 11-12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lingren and in view of Anderton, R. Larry (US 2003/0095627), hereinafter referred to as Anderton.

43. With respect to **claim 11**, Lingren teaches a method of assembling a detector for a nuclear imaging system ([0029] lines 3-4) comprising:

inserting each of a plurality of sockets (214; [0030] lines 1-2, Each module 206 includes a carrier 214 as seen in Fig. 3a.), which each include an array of individual detector elements (Fig. 3a), a plurality of electrical connectors ([0037] lines 1-2; [0041] lines 2-3), and socket alignment structures ([0041] lines 2-4) into a circuit board (208; [0030] lines 1-3) which includes a

plurality of electrical connections which electrically connect with the electrical connectors as the sockets are inserted ([0029] lines 5-6; [0037] lines 1-2; [0041] lines 2-4), and circuit board alignment structures, which mate with the socket alignment structures as the socket is inserted to align the arrays of detector elements with the circuit board and each other ([0041] lines 2-4);

Lingren further teaches a means for mounting a collimator to the circuit board in alignment with the circuit board ([0027] lines 3-4; Fig. 2). Lingren, also, teaches including a frame as a housing ([0033] lines 1-2) and an aligning means for aligning the frame and the circuit board ([0033] lines 1-2) and the collimator is mounted in a fixed alignment (Fig. 2). if it is held that Lingren does not teach the housing to surround the collimator (or the mounting means includes a frame) it would have been obvious to one of ordinary skill at the time of the invention to have the housing surround the collimator on the sides for the benefit of preventing stray radiation from adversely affecting the acquired image ([0032] line 3).

Lingren does not explicitly teach the frame (or housing) to be a collimator mounting frame, which frame mounts the collimator in fixed alignment.

However, it is known in the art, to include a mounting frame around the collimator for the benefit of increasing support and control in aligning the collimator, as shown in paragraph [0042] of Anderton.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mounting frame, as known in the art and

taught by Anderton, frame mounting the collimator, taught by Lingren, for the benefit of increasing support and control in aligning the collimator.

44. With respect to **claim 12**, Lingren teaches the individual detector elements are separated by interfaces or gaps (lines of separation 216; Fig. 3a) and wherein the collimator includes mechanical elements which define a plurality of apertures ([0027] line 4; collimators include a plurality of apertures, especially when an imaging device having a plurality of pixels is receiving the energy that is passing through the apertures), the mechanical elements being aligned with the interfaces or gaps such that the apertures are centered on and aligned with the individual detector elements (inherently, the collimator apertures and pixel centers are aligned providing the system with improved resolution). If it is held that Lingren does not inherently teach the collimator having a plurality of apertures or the apertures of the collimator being aligned with the center of the pixels; It would have been obvious to one of ordinary skill at the time of the invention to include a plurality of apertures in the collimator for the benefit of broadening the area being imaged at any given time. Also, it would have been obvious to one of ordinary skill at the time of the invention to align the apertures of the collimator with the center of the pixels for the benefit of increasing the resolution of the system.

45. With respect to **claim 21**, Anderton is silent on how the frame is secured to the collimator. However, it is very well known in the art to secure something into a frame using alignment pins corresponding to alignment holes. Therefore, it would have been

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obvious to one of ordinary skill in the art at the time the invention was made to mount the collimator in the frame, as taught by Anderton, including inserting collimator alignment pins into corresponding alignment holes in the frame, as is known in the art, as a person with ordinary skill has good reason to pursue the known options within his/her technical grasp.

46. Claims 13-14 are rejected under 35 U.S.C. 102(b) as anticipated by Orava et al. (US 5,955,733), hereinafter referred to as Orava, or, in the alternative, under 35 U.S.C. 103(a) as obvious.

47. **Claim 13** has been rejected under 35 USC 112, because of the additional text added in lines 4-5, as explained above. For purposes of a prior art search the Examiner is interpreting these lines to be repetitive and is disregarding this added text in lines 4-5.

Orava teaches a detector for a nuclear imaging system (col. 1, lines 9-10 and 16-17), the detector comprising:

- a substrate including a plurality of sets of electrically conductive holes (col. 5, lines 19-23) and alignment holes of a first cross section (col. 5, lines 40-42); and
- a plurality of detector modules (col. 4, lines 28-32) each detector module including a plurality of electrically conductive connection pins (col. 5, lines 16-23 and 46-47; col. 6, lines 65-67) and rigid alignment pins of the first cross section (col. 5, lines 40-43), each set of alignment holes 5b being

configured to receive the alignment pins 5a of one of the modules (col. 5, lines 16-23 and 40-43), the electrically conductive pins being softer than the alignment pins and easier to bend than the alignment pins, such that the alignment pins maintain the detector modules in alignment with each other and the circuit board even when the electrically conductive connection pins bend during receipt into the electric connection pin receiving holes (col. 5, lines 16-23 and 40-47; col. 6, lines 65-67).

In the alternative, if it is held that Orava does not inherently teach the electrically conductive connection pins to be softer than the alignment pins and easier to bend than the alignment pins. Orava teaches using a flexible material for the benefit of ensuring that the air pressure differential between the upper and lower surfaces of the device is maintained (col. 5, lines 36-40). Therefore It would have been obvious to one of ordinary skill at the time of the invention to have the electrically conductive connection pins made of a material that is sufficiently soft that tends to bend for the benefit of ensuring that the air pressure differential between the upper and lower surfaces of the device is maintained.

48. With respect to **claim 14**, Orava further teaches each detector module includes: individual detector elements which are electrically connected to the electrically conductive connector pins, the individual detector elements being mounted in a rectangular array separated from each other by a rectangular grid of interfaces (col. 4, lines 55-61; col. 5, lines 15-23; Orava teaches that in a preferred embodiment Active

Semiconductor Imaging Devices as described in PCT/EP95/02056 are used. As seen in Fig. 5 of PCT/EP95/02056 the individual detector elements are configured in a rectangular array including rectangular grid interfaces.).

49. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orava et al. (US 5,955,733), hereinafter referred to as Orava, and further in view of Lingren et al. (EP 1249713), hereinafter referred to as Lingren.

50. With respect to **claim 15**, Orava teaches or makes obvious all of the limitations of claim 13, as explained above. If it is held that Orava does not include a frame or alignment holes attaching the frame to the substrate.

Lingren teaches the substrate defines a plurality of substrate alignment holes and further including: a frame which defines alignment holes, which align with the substrate alignment holes for the benefit of preventing stray radiation from affecting the acquired image ([0032] line 3; [0033] lines 1-2).

51. With respect to **claim 17**, Orava does not teach the frame includes a collimator mounting means for mounting the collimator in precise alignment therewith, the collimator including: radiation blocking element that form a rectangular grid which overlays the interface grids of the individual detector elements which are mounted to the substrate when the collimator is mounted in and aligned with the frame that is aligned with the substrate.

Lingren teaches using a collimator for the benefit of increasing resolution ([0027] line 4). Therefore it would have been obvious to one of ordinary skill at the time of the invention to include a collimator, as taught by Lingren, in the invention taught by Orava, for the benefit of increasing resolution.

If it is held that Lingren, as modified above, does not teach the housing to surround the collimator (or the frame includes a collimator mounting means) it would have been obvious to one of ordinary skill at the time of the invention to have the housing surround the collimator on the sides for the benefit of preventing stray radiation from adversely affecting the acquired image ([0032] line 3).

If it is held that Lingren does not inherently teach the collimator having a plurality of elements or the apertures of the collimator being aligned with the center of the pixels; It would have been obvious to one of ordinary skill at the time of the invention to include a plurality of apertures in the collimator for the benefit of broadening the area being imaged at any given time. Also, It would have been obvious to one of ordinary skill at the time of the invention to align the apertures of the collimator with the center of the pixels for the benefit of increasing the resolution of the system.

52. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Orava et al. (US 5,955,733), hereinafter referred to as Orava, in view of Lingren et al. (EP 1249713), hereinafter referred to as Lingren, as applied to claim 15 above, and further in view of Chu et al. (US 2004/0080952), hereinafter referred to as Chu.

Orava further teaches the substrate to be in a rectangular configuration (Fig. 3).

Orava does not explicitly teach the frame has a rectangular face which includes: a longer dimension, and a shorter dimension; and the alignment holes including two alignment holes defined in the shorter dimension to reduce an effect of thermal dilatation.

However, it would have been obvious to one of ordinary skill at the time of the invention to have the housing, or frame, have similar dimensions to the array of detection modules for the benefit of decreasing wasted space and making the system more compact.

Chu teaches having two alignment structures of a frame disposed along the shorter dimension for the benefit of decreasing the difficulty in disassembling the frame ([0007] lines 7-8; [0009] lines 6, 9, and 15-16). Therefore, it would have been obvious to one of ordinary skill at the time of the invention to have the at least two frame alignment holes disposed along the shorter dimension in the invention of Lingren for the benefit of decreasing the difficulty in disassembling the frame.

Conclusion

53. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAROLYN IGYARTO whose telephone number is (571)270-1286. The examiner can normally be reached on Monday - Thursday, 7:30 A.M. to 5 P.M. E.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2884

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/David P. Porta/

Supervisory Patent Examiner, Art Unit 2884